DEPARTMENT OF THE INTERIOR
March 3, 1849

PROPERTY OF
Bureau of Land Management
DSC LIBRARY

JANUARY 1961
Vol. 10 • No. 3

Our PUBLIC LANDS

BUREAU OF LAND MANAGEMENT

88065763

JANUARY 1961 • Volume 10, Number 3

OUR PUBLIC LANDS . . .

> *"Conservation is a state of harmony between men and land. By land is meant all of the things on, over, or in the earth. Harmony with land is like harmony with a friend; you cannot cherish his right hand and chop off his left. That is to say, you cannot love game and hate predators; you cannot conserve the waters and waste the range; you cannot build the forest and mine the farm. The land is one organism. Its parts, like our own parts, compete with each other and cooperate with each other. The competitions are as much a part of the inner workings as the cooperations. You can regulate them—cautiously—but not abolish them."*
>
> (*From* "Round River—From the Journals of Aldo Leopold," edited by Luna B. Leopold, Oxford University Press, 1953.)

Issued quarterly by
UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
Washington 25, D. C.

The printing of this publication has been approved by the Director of the Bureau of the Budget, February 25, 1960

DEPARTMENT OF THE INTERIOR
Fred A. Seaton, Secretary

BUREAU OF LAND MANAGEMENT
Edward Woozley, Director

BUREAU OF LAND MANAGEMENT ORGANIZATION

Director	Edward Woozley
Associate Director	Earl J. Thomas
Assistant Director	Charles P. Mead
Assistant Director	James P. Beirne
Assistant to the Director	Charles R. Drexilius
Assistant to the Director	C. Edward Hoyt
Appeals Officer	Abe H. Furr
Cadastral Engineering Staff Officer	Donald B. Clement
Forestry Staff Officer	Walter H. Horning
Lands Staff Officer	Harold Hochmuth
Minerals Staff Officer	Max Caplan
Range Management Staff Officer	Gerald M. Kerr
International Cooperation Officer	Byron C. Denny
Information Officer	Dwight F. Rettie

AREA ADMINISTRATORS

Area 1, James F. Doyle	Portland, Oregon
Area 2, Neal D. Nelson	Salt Lake City, Utah
Area 3, Westel B. Wallace	Denver, Colorado
Area 4, Jesse M. Honeywell	Juneau, Alaska

Materials in this publication are not copyrighted and may be reprinted without permission. Mention of the source will be appreciated but is not required.

CONTENTS

ARTICLES

PROJECT TWENTY-TWELVE 3
FIRE DANGER RATING IN ALASKA
by James W. Scott, *Fire Control Officer,* Anchorage, BLM ....
EFFECTIVENESS OF EROSION ABATEMENT PRACTICES ON SEMIARID RANGELANDS IN WESTERN UNITED STATES
by H. V. Peterson, *Geologist,* and R. F. Hadley, *Geologist,* Geological Survey ... 6
BLM GOES TO THE JAMBOREE
by Robert E. Wilber, *Information Specialist,* BLM 8

FEATURES

ACTIVE ACRES 10
  Surveys in Alaska
  Hunters
  Highest Earthfill Dam
  National Historic Sites
  Geologic Map
  BLM Revenues Set Record
  Rehabilitation

ON THE TEAM

  fighting fire on Rattlesnake Mt.
by Len C. Gardner 12
RANGE CONSERVATION 20

COVER

High lead logging on BLM's O&C forest lands in western Oregon. Encompassing about 2.1 million acres, the O&C lands contain some of the finest, high quality, old growth timber in the Nation. The annual harvesting of timber on O&C lands is limited to their sustained yield capacity. Their average annual capacity, based on an intensive inventory of the growing stock was recalculated at 874.2 million board feet in 1959. As reforestation and other silvicultural practices are intensified, the timber yield will incr

FIFTY-TWO YEARS of sound conservation planning are spelled out in PROJECT TWENTY-TWELVE, the long-range program for management and development of the lands and resources administered by the Bureau of Land Management.

The title of this dynamic program comes from its target date of completion, the year 2012—the 200th anniversary of BLM.

PROJECT TWENTY-TWELVE represents the first comprehensive long-term look at the Nation's public domain lands and resources. As such, it represents a vastly significant contribution to their present and future conservation, management, and development.

The program emphasizes the value and importance of the remaining unreserved public domain—its lands, forests, water, grass, wildlife, soil, and other resources.

Plans are laid out for managing public domain range and forest resources on a sustained yield basis. The program calls for thousands of range improvements, such as detention dams, springs, and wells, 115,000 acres of range fencing, 12.3 million acres of range seeding, and 32.3 million acres of brush control.

To maintain the productivity of Bureau forest lands, approximately 152,000 acres will have to be reforested during the next 5 years. PROJECT TWENTY-TWELVE also calls for thousands of acres of forest site improvements.

Under the program BLM's present cash receipts are expected to double by 1980 and quadruple by 12. This will result from more intensive management of the land and resources, and the incorporation of managerial and technological advances into all BLM activities.

The present 105 million acres under mineral leases is expected to be increased to 270 million acres by 2012, with a rise from $96 million to $358 million in mineral leasing receipts. Under PROJECT TWENTY-TWELVE all land activities, including classification and adjudication, would be conducted on a selective and priority basis. Cadastral surveys would be stepped up from the present 2 million acres a year to 8 million acres a year in 1965. A peak of nearly 10 million acres would be surveyed each year by 1980.

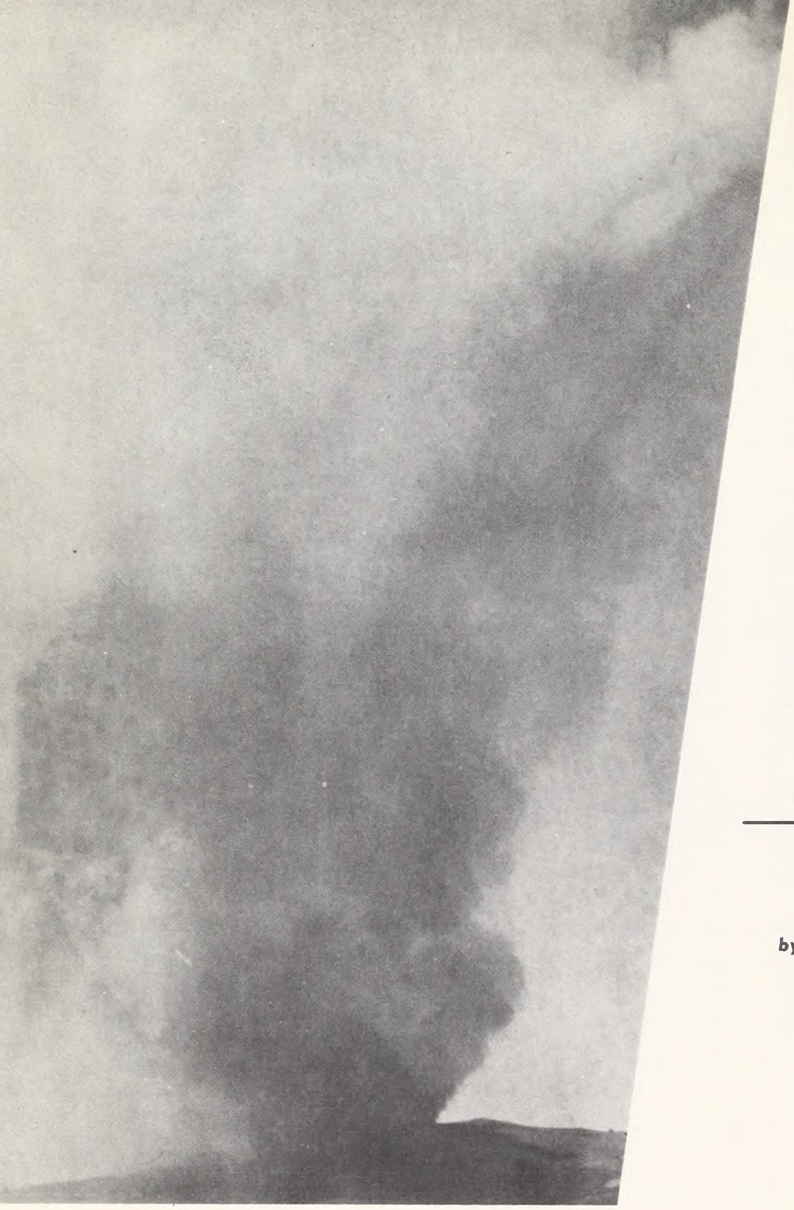
The present public range forage production for 17 million animal-unit months is expected to be increased so as to provide for 29 million AUM's by 1980 and 46 million AUM's by 2012. The volume of public domain timber to be annually harvested would reach 1.2 billion board feet by 1965. By 2012 the total allowable timber cut, on a sustained yield basis, would be 1.3 billion board feet a year. Under the program a permanent road system would be expanded to adequately facilitate the need of land management and public access. By 2012 BLM would have some 23,000 miles of road to maintain.

PROJECT TWENTY-TWELVE includes provisions for a complete public land mineral resource inventory. It also places emphasis on an inventory of demands for recreational resources on public lands.

BLM's ultimate goal in developing and initiating this long-range action program has been to conserve and improve the natural resources on our public lands during a period when demands for them will become increasingly competitive. PROJECT TWENTY-TWELVE will long be proclaimed by conservationists as a dynamic step forward in public land management. **End**

PROJECT TWENTY-TWELVE

UNITED STATES DEPARTMENT OF THE INTERIOR
Fred A. Seaton, *Secretary*
BUREAU OF LAND MANAGEMENT
Edward Woozley, *Director*
1960



FIRE DANGER RATING IN ALASKA

by James W. Scott, *Fire Control Officer*, Anchorage, Alaska, BLM

NATURAL resources have long been Alaska's greatest attraction. To the Russian discoverers of Alaska in 1741 and to the adventurous hunters who soon followed, the luxurious fur of the sea otter was the most valuable feature of this great land. By 1867, when the United States purchased Alaska, only a pitiful remnant of a great fur resource remained. The fabulous discovery of gold in 1898 brought the miner. The only symbols of this hectic period evident now are the decaying buildings of the boom towns of that bygone era. But Alaska is still a vast, largely undeveloped reservoir of resource wealth. It is also an important defense link for a free world threatened with conflicting ideologies.

The area of Alaska is 586,400 square miles, which is roughly equal to one-fifth of the combined area of the other States. In this vast region there are wide differences from place to place in climate, land forms, and soils. About 80 percent of the area of Alaska is public domain under the jurisdiction of the Bureau of Land Management.

One of BLM's many responsibilities in the management of public dmain lands in Alaska is forest protection. There are about 125 million acres of forest and woodland under BLM jurisdiction in Alaska.

The long hours of daylight and light rainfall which characterize the summers of western and interior Alaska, create a serious forest and range-fire season from April through September each year. Forest fires have burned over an estimat

80 percent of Alaska's public domain forest lands during the past 60 years.

The new State and our Nation cannot afford these tremendous losses. From north of the Arctic Circle to the southernmost tip of Alaska's panhandle, everyone is very dependent upon forests and the lands upon which they grow.

An important factor in combating any enemy is being able to determine when that enemy is most likely to strike. In the case of fire this is done by fire-danger rating.

Fire danger may be described as a resultant of the constant and variable factors which influence the inception, spread, control and terminal damage caused by wildfire. Fire-danger rating is a management system which integrates selected factors into qualitative or numerical indices of current protection needs (*1*). Perhaps it is better described as total-fire danger since it is, to say the least, a comprehensive term and concept.

Foresters working within fire problem areas of the United States were developing so-called fire-danger rating methods long before the advent of organized fire control in Alaska. In 1930, H. T. Gisborne set up the first fire-danger meter for the Northern Rocky Mountain States (*2*). It was adopted for administrative use in 1935.

The weather factors, relative humidity, wind and fuel moisture plus calendar date advance, made up the burning index. The burning index was modified by the amount of lightning and degree of visibility to create the term fire danger. The burning index set the stage in potential; fire danger provided assistance in determining depth of organization preparedness and strength of attack (*3*).

In 1942, Alaska's fire control organization was a mere infant. Although organizational maturity has not yet been achieved, the need for a system of fire-danger rating in Alaska was recognized at an early date. In 1949, the Bureau of Land Management took the first step in the direction of fire-danger rating in Alaska. At that time an attempt was made to measure current fuel-moisture at widely scattered localities, utilizing a system developed for the Southeastern States. Favorable results were not realized.

To a small organization charged with the monumental responsibility of protecting 225 million acres of heterogeneous vegetation and topography, there was a particular need for an effective fire-danger rating system.

Ideally, the fewer elements requiring accurate measurement the better, both from an economic and operational standpoint. Local knowledge of the fixed elements such as fuels, their density, type, and distribution were fairly well established. A weather history dating to 1934 yielded sufficient information to define climatic patterns. Climatic patterns, as well as soils, topography, aspect and risk are not subject to rapid change.

Local interest was focused upon the variables which exert immediate influence upon the total fire complex, namely air movement and fuel moisture.

The climatic and vegetative similarity between Alaska and the Northern Rocky Mountain States influenced putting to use in Alaska in 1956 methods developed by the Division of Forest Fire Research. This method, known as the Intermountain Fire Danger Rating System, incorporated into a numerical index the four most important and variable elements influencing fire behavior. They are:

1. Severity index
2. Current fuel moisture
3. Relative humidity
4. Wind

Severity index is the term used to define cumulative fuel moisture in numerical terms. Fuel moisture content is defined as the quantity of moisture in fuel expressed as a percentage of its ovendry weight (*4*).

In 1956, fire weather stations were established at Anchorage, Fairbanks, Homer, Glennallen, McGrath, Fort Yukon, Tanacross and Palmer. Twice daily throughout the fire season, fire-weather measurements were taken and rated. It was quickly recognized that the results did not reflect the total fire condition in Alaska. Analysis of normal and current regional climatological data furnished to BLM by the U.S. Weather Bureau in Alaska showed that broad climatic patterns could not be used to indicate burning conditions at any specific time or place. Fuel moisture measurement appeared to be the principal factor in rating fire danger in Alaska.

All fuel moisture measurements had been made by weighing a unit consisting of four ½-inch diameter pine dowels with an ovendry weight of 100 grams. The unit was suspended upon wire racks

(Continued on page 14)

PORTABLE fire danger rating station. A BLM fire control man checks relative humidity.

EFFECTIVENESS OF EROSION ABATEMENT PRACTICES ON SEMIARID RANGELANDS IN WESTERN UNITED STATES

by H. V. Peterson, *Geologist*, and R. F. Hadley, *Geologist*,
Geological Survey

Editor's Note: The following remarks were made before the International Union of Geodesy and Geophysics at Helsinki, Finland, August 8, 1960.

THE semiarid rangelands in western United States yield large quantities of suspended sediment to streams, causing serious erosion problems and resulting in reservoir sedimentation and damage to valley bottom lands. This paper deals with the control of erosion on the higher rangelands, near the sources of sediment, and its effectiveness both in reducing the downstream problems and in restoring the range.

Rangelands comprise more than one-half of the total area of 11 western States. These lands have little agricultural value other than for grazing. The arid to semiarid climate which characterizes most of the area, combined with the characteristically immature and commonly rocky soils and unfavorable topography, precludes their use for crops. Most areas that are amenable to irrigation by reason of available water and favorable relief have already been developed.

The same features which make the land fit only for grazing also tend to make it vulnerable to erosion. The low precipitation supports a sparse vegetation that is only partly effective as a protection against erosion. Periods of drought are often interspersed with high intensity rains, which generate short but destructive floods.

Physical features of the land likewise tend to favor rapid eroding. Hilly terrains with thin rockly soils usually support an ineffective vegetative cover and so are eroded easily. Even flat valley lands with deep alluvial soils often have a poor vegetative cover, owing to insufficient moisture, and are thus vulnerable to certain types of erosion, particularly gully cutting.

Gullying combined with other types of erosion is causing serious problems in most western streams. The filling with sediment of the mainstem reservoirs, such as those located on the Colorado River and Rio Grande, is not expected for many generations, because of their very large storage capacities. However, smaller reservoirs located on minor streams and tributaries are being filled at a rapid, and in some cases an alarming, rate. This applies particularly to stock ponds and small irrigation and conservation reservoirs.

As an example, consider a group of 17 retarding reservoirs constructed for flood control and erosion abatement in the 23-square-mile drainage area of Cornfield Wash in north central New Mexico. Studies show that these reservoirs lost 39 percent of their capacity in the first 5 years of operation, 1951–55. The drainage area for the reservoirs ranges from 0.1 to 7.1 square miles and the initial storage capacity averaged 35.5 acre-feet per squar mile of drainage area. The reduction in capaci resulting from sediment deposition has seriously impaired the usefulness of the reservoirs for their designed function. The example may be somewhat extreme, but in the main it is typical of other localities in the Southwest.

In recent years deposition of sediment in the major stream valleys has added to the seriousness of another problem, namely, the consumption and waste of water by phreatophytes, particularly salt cedar (*Tamarix gallica*) and related types. The deposits of sediment along streambanks and on the adjacent floodplains provide what appears to be the ideal environment for phreatophyte growth. The high water table common to these localities, combined with the natural fertility of the freshly laid sediments, stimulates very rapid growth of the plants.

Studies made in the Safford Valley of Arizona show that salt cedar will use up to 9 feet of water per year with the water table 4 feet below ground level, and 7 feet per year with the water level 7 to 8 feet below ground level. This loss is approximately five times greater than natural evaporation from bare ground would have been with the water table at the same distance from the surface, and it is probably two to three times greater than would have been required to raise crops of small grain or grass. As the phreatophytes have no commercial value, the difference between th water they consume and the natural loss, or the water that might have been used for raising crops, is complete waste.

Recognizing the continually expanding problem of damage related directly to excessive erosion, corrective conservation measures of varied kinds and types have been attempted during the past 25 years, with varying degrees of success. The measures are divided into two general classifications: (1) those dealing with the land; and (2) those dealing with water or runoff.

Land treatment includes such measures as reduction and regulation of grazing, reseeding, brush removal, contour furrowing, ripping, pitting, and other similar practices designed primarily either to slow down the runoff or to increase permeability by puncturing the soil mantle.

Although each of these measures has some effect on water yield, a more positive control of runoff is obtained through use of structures. These may vary in size and cost from the relatively large dams designed primarily for flood control, but occasionally operated in connection with water-spreading operations, to the simple gully plugs used in an effort to control and heal small gullied channels.

Other conservation structures used mainly for the control of water are the various types of water spreaders designed to intercept runoff and distribute it evenly across the surface, thus affording greater opportunity for infiltration and the growth of vegetation. The waterspreaders were constructed of a variety of materials including earth, loose rock, hand-placed rock, concrete, slash, loose brush, brush ties with wire, and even dense plantings of cactus and low shrubs in the form of hedges.

Among the land-treatment practices, control of grazing was early recognized as essential if success of other conservation measures were to be achieved. Such control became possible with establishment of grazing districts and assignment of grazing allotments to individual users. Under these conditions the user was willing to support regulation and reduction in the number of livestock, since in doing so any improvement of the range accrued to his benefit and he did not run the risk of losing it to a less conservation-minded competitor as he did under open-range conditions. As a result there was a reduction in the total amount of grazing between 1937 and 1955 of about 25 percent.

The effects of grazing reductions and other nonstructural land-treatment measures are difficult to define or evaluate. It is practically impossible to isolate the effect of any one measure. It is to be expected that where various types of treatment have been accompanied by grazing reduction, any resulting improvement would represent the combined effect of all measures.

As an example of this condition, changes in the Colorado River basin can be cited. Beginning about 1942 there has been a gradual reduction in the ratio of suspended sediment discharge to annual runoff as indicated by double-mass diagrams

(Continued on page 16)

INTER · AGENCY
BADGER WASH STUDY AREA
TO DETERMINE LAND MANAGEMENT CRITERA AND
METHODS OF REDUCING EROSION AND RUNOFF
COOPERATING FEDERAL AGENCIES
BUREAU OF LAND MANAGEMENT · FOREST SERVICE
BUREAU OF RECLAMATION · GEOLOGICAL SURVEY

active acres

SURVEYS IN ALASKA

BLM surveyed more than one million acres in Alaska during just 3 months. This is nearly 2½ times the area surveyed during the previous 12 months.

BLM's survey program is now operating in high gear and survey progress in the future will probably surpass the present rate.

One major survey project was a study at Sheep Mountain on the Glenn Highway northeast of Anchorage to test the use of precise aerial photographs in making public land surveys. This method involves measuring distances on very accurate aerial photographs to locate township and section corners without actual on-the-ground work. The corners are then placed by helicopter crews.

Further refinements will be needed, but it is expected that the method will have a big future in public land surveys.

The study showed that with photographs taken from a height of 10,000 feet, errors in measuring were less than 2 feet per mile.

Other new survey concepts and techniques are being pressed into service to speed up the Alaska survey program. These include helicopters and electronic distance-measuring devices. To carry out its expanded program, BLM increased its Alaska survey staff from less than 50 to 72 men in the last 2 years.

The survey program was put into high gear so BLM could act on applications filed by the State under the 103-million-acre Statehood land grant. The Statehood Act requires that selected land be surveyed.

HUNTERS

A total of nearly 12 million hunters in 46 States purchased one or more licenses to hunt during 1959. This is a decline of 2.2 percent from the number of hunters in the same States during 1958.

Hunters in 50 States spent about $58 million for hunting licenses, stamps, tags and permits required by State fish and game departments to legally pursue and kill game. Expenditures for 1959 exceeded those for 1958 by about $4 million.

HIGHEST EARTHFILL DAM

Trinity Dam, a major feature of the Central Valley Reclamation Project in northern California, has reached its ultimate 537-foot structural height, making it the highest earthfill dam in the world.

The dam will create a major storage reservoir on the Trinity River.

Trinity Dam contractors, with their large fleets of earthmoving equipment, have completed the placement of 33 million cubic yards of earth and rock after working for a 3½-year period, since April 1957.

The carefully selected and processed material was moved into place by 140 pieces of earth-moving equipment and a 2.8-mile conveyor belt. The scientifically compacted structure forms an impervious barrier which will create a sprawling mountainous lake of 2½ million acre-feet of water.

The total construction contract was about $49 million.

NATIONAL HISTORIC SITES

Historic landmarks of national significance and interest may be registered by the National Park Service.

The *National Registry of Historic Landmarks* is designed to recognize and endorse the preservation and protection of structures and sites now administered by the States, other public agencies, or historical societies and to encourage private owners of historic landmarks to maintain such properties.

The establishment of this *Registry* serves a long-felt need for the Federal Government to give moral support and recognition to organizations now concerned with the preservation of archeological and historic properties.

The Federal involvment will be limited to the issuance of certificates, periodic inspection and arrangements for the site owner to acquire a suitable marker.

The *Registry* will provide tourists and students a list of the more important of the large number of landmarks recognized by a variety of organizations throughout the country.

GEOLOGIC MAPS

Geological Survey's *Geologic Map of the United States*, first published in 1933, has been reprinted with important color changes that make it easier to read.

The 1960 edition is in four quarters, 27 inches by 47 inches, and is available from the Geological Survey, U.S. Department of the Interior, Washington 25, D.C., at $1.50 per quarter or $6 for the set. The scale is 1:2,500,000 (1 inch equals about 40 miles). Alaska and Hawaii are not included.

When first issued the map was printed on old-style flatbed presses from 92 lithographic stones weighing 400 to 500 pounds quarried in Germany. Lithographing 5,000 copies required 138 working days, or about 6 months. The speed of the presses was limited to approximately 700 impressions per hour per color.

The 1960 run has been printed on modern high-speed lithographic presses capable of handling 5,000 sheets an hour, printing two colors simultaneously. Instead of the heavy stones, the latest edition was printed from 48 lightweight, aluminum lithographic press plates. The complete edition of 12,000 copies, or 48,000 sheets, was completed in 15 days. The four quarters of the finished map show 158 distinct and readily discernible colors or shades.

BLM REVENUES SET RECORD

The public domain managed by BLM produced revenues to the United States Treasury of more than $371 million during fiscal year 1960. This is an all-time record for any 1 year.

Revenues during 1960 also included the 2-billionth dollar in public land receipts as the grand total of all-time revenues since 1785 climbed to more than $2¼ billion.

During the same year that BLM took in $371 million, congressional appropriations to BLM amounted to about $34 million, including $28 million for the management of lands and resources, $5 million for construction, and $769,000 for range improvements.

Receipts from the sale and leasing of public domain land and resources are an important source of revenue at both the national and local level. About $500 million have been distributed to States and counties, including about $52 million in 1960. These revenues are important aids to education and other local Government programs.

The 1960 revenues came from the following sources: mineral leases and permits $324 million (including $229.5 million from rents, royalties, and bonuses on the Outer Continental Shelf); timber sales, $36 million; sales of public land, $5 million; grazing, $4 million; and $2 million from other sources.

REHABILITATION

BLM is conducting a large scale program to rehabilitate areas in the West burned by range and forest fires last summer.

The Interior Department and BLM urgently requested a supplemental appropriation of $1.5 million at the end of the summer to begin rehabilitation work on burned-over BLM lands in the West. Congress appropriated $1,425,000.

The supplemental appropriation is providing funds for emergency rehabilitation work on approximately 130,000 acres of critically burned forest and rangelands in nine western States. About 50,000 acres of public lands in Idaho are being treated, 45,000 in Oregon, 13,000 in Arizona, and up to about 5,000 acres in each of California, Nevada, Utah, Montana, Wyoming, and Colorado. **End**

CORRECTION

In the table on page 4 of the October 1960 issue of *Our Public Lands*, the last figure in the last column, change "10.0" to read "19.0."

The highest point in the State of Colorado is Mount Elbert (el. 14,431 feet); the lowest point in the State is along the Arkansas River at an elevation of 3,350 feet.

The area of the Great Salt Lake in Utah is approximately 1,800 square miles.

Point Barrow in Alaska (latitude 71°24′) is 5,000 miles north of the Equator.

BLM GOES TO

by Robert E. Wilber,

FOR nearly 60,000 Scouts and Scouters it was a sight and experience to long remember. Thousands of tents arrayed in every color of the rainbow were spread across the high plains at the base of Pike's Peak near Colorado Spings, Colo. For 6 days, from July 22 to 28, this giant tent campground was Colorado's fourth largest city.

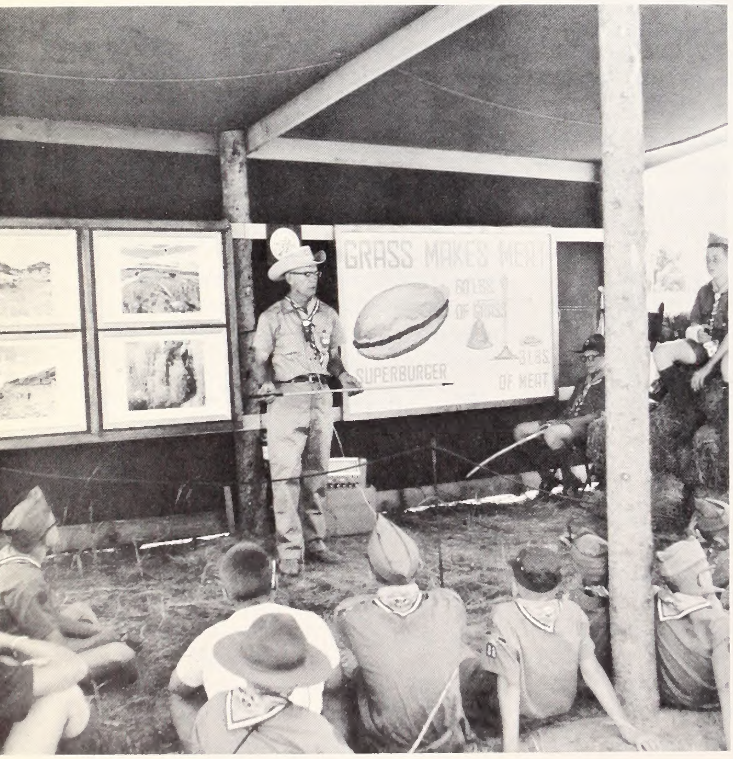
The event was the 1960 National Boy Scout Jamboree. This 5th National Jamboree, which corresponded with Scouting's 50th anniversary, was the largest ever held. In addition to 56,000 Scouts from all 50 States and possessions there were representatives from 38 other nations.

The Bureau of Land Management was one of many public and private organizations which assisted the National Jamboree Committee of the Boy Scouts of America in planning and developing the 5th National Jamboree program.

The huge encampment was held on the 2,0 acre Reverse J Diamond Ranch of Mr. and M R. E. Johnson, a few miles north of Colorado

TRADING PATCHES. One of the primary activities at the Jamboree.

SCOUTS were very attentive at all exhibits. Below they hear about range management.



THE AVENUE OF FLAGS. At the end stands a giant cardboard birthday c

TH JAMBOREE

ormation Specialist, BLM

Springs and adjacent to the new Air Force Academy. The grounds were divided into 39 sections or "villages" each with a population of about 1,400.

Much has been written on Jamboree statistics and it is understandable because to the average person they were fantastic. About 32,000 Scouts and leaders arrived by railroad on 68 special trains and 28 regular trains; about 4,000 came by chartered planes; and the remaining 18,000 Jamboree campers traveled by bus, and many nearby Scouts came by automobile.

The boys moved in and set up their camps with such orderliness and precision that it would have made many an Army general shake his head in amazement. A steady stream of buses rolled onto the Jamboree grounds during the 24-hour period preceding the opening. There were very few mix-ups or signs of confusion. Overnight a colorful city complete with trading posts, churches, barber shops, theaters, hospitals, and other modern conveniences sprang up.

representing the 50th anniversary of Scouting.

TWO MULEPOWER VEHICLE. It took 2 Scouts 31 days to drive this rig from California to the Jamboree.

The vigorous outdoor life at the Jamboree really sharpened appetites. It is estimated that the Scouts consumed 10,000 cases of breakfast food, 2,500 cases of canned fruits, 5,500 cases of canned vegetables, 2,500 cases of canned meats, 21,000 pounds of ground beef, 26,000 pounds of steak, 578,000 quarts of milk, 44,000 quarts of fresh orange juice, 132,000 loaves of bread, 10,000 pies, 46,000 heads of lettuce, 45,000 peaches and 77,000 bananas.

Each day more than 1.5 million gallons of water were used. More than 8 miles of water mains and

(Continued on page 18)

SCOUTS listen to a BLM Range Conservationist explain the purpose and operation of a Bureau constructed water spreading system.

ON THE TEAM . . . .

fighting fire on Rattlesnake Mt.

by **Len C. Gardner**

Reprinted by special permission.
Rawlins Daily Times, Rawlins, Wyo.

FEW INMATES of the Wyoming State Penitentiary are afforded the privilege of taking a bus ride while serving their sentences. But such was the case of 27 inmate-trusties who traveled to the Cody area recently to assist the Bureau of Land Management in fighting a forest fire in the Rattlesnake Mountains.

This trip was brought about by a request to Warden Daugherty of the penitentiary from the Bureau of Land Management office in Rawlins. Arrangements had previously been made whereby Warden Daugherty would furnish, upon request, a team of about 25 inmates to fight forest fires and this particular incident provided the opportunity to experiment with this method of utilizing prisoners in emergencies where other workers are not immediately available.

It is an unusual and unique circumstance when inmates of a penitentiary are integrated with civilian personnel to form and perfect an effective weapon for fighting a fire capable of destroying thousands of acres of green forest.

Initially, both civilian personnel and inmates were somewhat apprehensive about their ability to work in harmony with each other as a team, but as time passed, one could observe the development of the confidence one group had in the other. Soon, it was not two groups of separate and distinct societies, but all were molded into one group to make a concerted effort to perform as one big team.

Most, if not all, of the inmates who were sent to the fire knew little or nothing about firefighting. Representatives of BLM and the Forest Service made an all-out effort to give all of us a hasty but thorough indoctrination into the basic principles of firefighting, emphasizing at all times the importance of each individual diligently observin safety regulations. After this it was simply a matter of employing these procedures in the actual fire situation and improving through trial and error. Through the supervision, interest and tolerance of these Government representatives, we actually became fairly accomplished firefighters.

On our second evening a team of 15 inmates was sent to a canyon about 10 miles from the base camp to fight a fire that had already destroyed between 250 and 500 acres of timber. Our job

SMOKE billows from the lower reaches of Rattlesnake Mt. On top the fire was completely out of control.

was to go into the burning area, make a line (which is used to prevent fire from spreading), backfire the area (a system of burning out areas and fighting fire with fire) and keep destruction to the lowest possible minimum. The canyon was situated about 1,500 feet straight down with no escape route available except almost straight up on one side. Other sides were surrounded by fire.

After we had gotten into this canyon and started our backfiring, heat and smoke, along with imminent danger from the fire itself, became so unbearable, immediate retreat was imperative. This was indeed something to see! Fifteen inmates of a penitentiary retreating up a mountainside at top speed, each looking out for the other and all looking out for our guard who had in recent months experienced illness and hospitalization. It is certainly gratifying to realize that inmates do not necessarily lose interest in and respect for their fellowmen as the result of incarceration in a penitentiary.

Warden Daugherty placed in each prisoner sent to the fire all the confidence a warden can place in an inmate. When each man left the gates of the penitentiary, it became his duty and obligation to disprove ideas and opinions of our society and to uphold the warden's confidence and trust in him individually.

Hard work, itself, can make a definite impression on the average person and this was our greatest weapon of all in proving that all convicts are not dilatory degenerates or incorrigibles. Another effective weapon was the amiability of the convicts toward the civilians. We tried to show them that we were a fairly intelligent group and not necessarily interested in discussing the criminal aspects of life as applied to us. Eventually, complete acceptance was given and the inmates were acknowledged as reliable individuals on their own merits.

Progress on the huge fire was slow and when manpower became a more critical problem, Warden Daugherty dispatched 28 additional inmates to the scene. On this occasion they were maximum security prisoners from inside the walls of the penitentiary. To many people this would seem unwise, but this is not a true appraisal of the situation.

To be a warden, you must know your inmates and be able to distinguish between those who are sincere and those who are not. If you allow a man a privilege, you must have confidence that he will represent you well and not abuse the privilege you have given him.

Good results were immediately apparent as this group of 28 inmates began integration into crews already established. These inmates were also hard-working individuals seeking recognition which they definitely received from their supervisors and fellow workers alike.

HUNGRY firefighters pass through the chow line.

Forest fires are much different from other types of fires in several ways. In this vast mountainous area of green trees, a fire travels with almost unbelievable speed, even to a person actually watching it. In fighting these fires, you must make a continuous observation in order to avoid being trapped by the soaring flames. As the fire travels, it exhausts all oxygen in the immediate air, which induces suffocation to any person caught within its boundaries. This factor remains in any person's mind throughout his tenure as a firefighter and convinces him of the importance of being alert and having respect for the fire's tenaciousness.

We continued to battle this tremendous fire from day to day and at times it seemed that we were accomplishing nothing. Often we would get a blaze extinguished in one section of the forest and another would break out to such an extent that little or nothing could be done about it. Many nights, inmates returned to camp tired and dejected, but before them was placed a meal of steak, complete with salad and dessert. After a meal, a sleeping bag looked like a suite at the Waldorf-Astoria.

For 10 consecutive days we fought this fire and on the 11th day were aided tremendously by a rain. With help from the rain, we managed to get the fire completely extinguished and when nothing was left but cleaning up of debris, we were released from our assignment to return to the brownstone building on Walnut Street and resume once more our roles as convicts.

As we entered the gates of the penitentiary and the iron doors clanged shut behind us, one thought was uppermost in our minds. Regardless of what we had done to become inmates of a penitentiary, for 11 days and nights we were accepted by society and had been given a chance to prove that we are human and can perform good services to a good and free country.

As we retired to our steel beds on the night of July 30, we knew that during the course of those 11 days, we were inexperienced but hard-working firefighters and that some of these fine days when we are released from prison we will be given an opportunity to prove to society as a whole that we can work and be honest citizens just like any other normal citizen participating in this wonderful democratic way of life we are so privileged to enjoy.

When we reach this point, may God grant us the understanding to never forget that there are people who are not as fortunate and need our help and understanding.

Editor's note: Len C. Gardner was one of a group of over 50 trusties of the Wyoming State Penitentiary taken to Cody to fight a forest fire last summer. His article first appeared in the Rawlins Daily Times, Rawlins, Wyo., on August 5.

END of a hard battle. The fire is out.

FIRE DANGER RATING

(Continued from page 5)

10 inches above ground level, beneath a mantle of 14-mesh wire screen, double layed.

This instrument did not respond fast enough to the rapid moisture content fluctuations occurring, particularly in the light and medium forest fuel types common to Alaska. The many hours of sunlight have a greater effect upon the fine fuels than the ½-inch fuel sticks are capable of indicating.

At the suggestion of A. A. Brown, Director of Fire Research, U.S. Forest Service, Washington, D.C., the basswood or "Appalachian slats" of the Eastern States System were acquired. The Appalachian slats consist of three pieces of basswood venetian blind stock, 37 inches wide, 18 inches long, and ⅛-inch thick, weighing collectively 95 to 109 grams. They are positioned singly and parallel to one another in the same manner as the pine dowels, and they are weighed together.

Fuel moisture measurements with both the pine dowels and basswood slats were made during the 1957 season. A review of the 1957 fire season weather records showed that the response of the basswood slats to the constantly changing weather complex in Alaska is similar to that of actual fuels.

Fire research personnel recommended an increase in the number of fire-weather stations in Alaska. This recommendation was followed and in 1958 BLM entered the fire season with 12 fire-weather stations. Also, two portable stations were acquired. These were manned by fire-weather specialists to study weather and fire behavior on going fires.

During this same year an empirical rate of spread table was adopted on a trial basis, and a study of forest fuels was initiated.

An analysis of fire records for an 18-year period is near completion. Through this analysis a systematic approach to major problems can be made.

A study of fire occurrence patterns is presently underway.

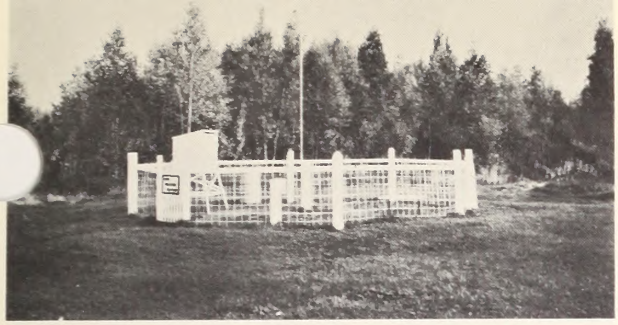
Time-lapse photography was employed during the 1958 fire season to photograph the cumulonimbus cloud buildups in Alaska. Reports of this study, a part of extensive cloud-survey work being conducted under Project Skyfire, will soon be available (*5*). Camera equipment was made available for this purpose by the Munitalp Foundation. An analysis of Weather Bureau records has been summarized on IBM data processing cards.

The important factor, fuel moisture, is receiving priority attention. In 1958, Fire Research set up a study to determine actual moisture content of several classes of forest fuels. The purpose was to determine if a correlation existed between a tual fuels and the fuel moisture sticks and slats.

The often repeated phrase "no two fires behave alike" is most certainly true, and particularly in Alaska. Fire-control personnel in Alaska have become accustomed to dealing with the unusual from a behavior standpoint. Alaska has been likened unto a green desert (*6*). In this statement lies a clue to some of the fire-behavior characteristics common to many Alaska fires. There is lush vegetative cover over most of Alaska. The interior receives no more precipitation than the semiarid Southwest States.

Hardwood stands ordinarily used as a line of defense often "crown out" and "blow up" in interior Alaska. Cloud mantles and inversions, which normally arrest a fire's activity, are commonly "pierced" and fires explode. Burns are subject to repetitive reburns, some of remarkable intensity. These and similar behavior phenomena are a constant source of amazement and trouble, particularly when dealing with a very vast area. In 1958, Fire Research initiated a study to evaluate fire behavior.

Two two-man teams of fire-weather specialists were employed by BLM and given intensive training by a Forest Service research forester. These specialists were transported to free-burning fires, generally accompanying the initial suppression forces. On the fires they set up portable fire-



FIRE danger rating station in Alaska.

weather stations, and immediately commenced recording fire-weather and burning index data. Secondly, they took fuel samples from areas where the fire appeared most active. Last, and the most difficult, they recorded the forward speed or rate of spread of the fire.

The relative degree to which a fire may succeed in extending its dimensions, regardless of fuel type, is the fire-control planner's greatest cause for concern. Research to date has yielded some rate of spread data. An empirical rate of spread classification for Alaska was made in 1958.

Fire control in Alaska has been greatly assisted in recent years as a result of intensified fire-problem investigations in the other States. More effective fire-control methods, equipment and techniques have resulted from the research. There is, however, a pronounced need for an accelerated approach to fire problems, peculiar to Alaska. Data resulting from local investigations could be more effectively translated and applied to local problems. There are a number of areas which should be explored.

- The influence exerted upon combustion by fuel moisture is of major importance. A more adequate instrument is needed, one possessed of greater sensitivity, for use in determining fuel moisture in Alaska.
- The relationship or influence of soil moisture and permafrost upon fuel moisture should be determined.
- The total forest complex must be viewed from a fire-control standpoint—what is there to burn?

Forest cover types are subject to wide variations of fuel type. Fire management must be capable of classifying the critical fire-behavior characteristics of forest fuels. Rate of spread, a behavior characteristic, cannot be recognized as independent criteria when concerned with total fire danger. Fire control would be greatly assisted in Alaska by a fuel-typing program.

- H. J. Lutz made a substantial contribution to fire management, through his classification of Alaska forest types (*7*). R. R. Robinson assigned rate of spread factors to those forest types (*8*). The inclusion of fuel typing with the above mentioned work would give fire-management rate of spread data based upon true fuels.
- The key to early detection of fires may well lie in those dynamic indicators, clouds (*9*). A meteorologist to forecast the development of lightning activity and track buildups on radar is needed.
- A lightning index is needed. Fire-control personnel in Alaska are familiar with the geographic origin of thunderstorms. The preponderantly diurnal occurrence, limited, although erratic directional movement, and rather rapid dissipation of thunderstorms are common knowledge. How much of the lightning activity which accompanies these buildups in cloud to cloud or cloud to ground is not known. It is hoped that the results of investigations into this problem presently underway under Forest Service Project Skyfire will be applicable locally.
- Fire weather forecasters are needed.
- Alaska has one fire-danger rating station to every 14 million acres requiring protection. With such an extensive sampling, fire management's problem of interpretation is obvious. The number of fire-danger rating stations must be increased and more evenly distributed to produce a realistic picture.
- A new system of fire-danger rating should be developed for Alaska. Those factors which would be considered in a unified national system, which is presently receiving attention in the other States, should receive attention in Alaska. Fire management hopes Alaska will be considered for timely integration into the national system.

The existence of conflagrations in Alaska's forests was noted by the Russians of Baranof's era, and further confirmed by the observations of Brooks (*10*), and other reliable sources, at quite an early date. However, attention has been focused upon the problem only recently.

The Bureau of Land Management has with each successive year taken full advantage of the technological advances made available through fire research. Through the cooperation of the Forest Service, the Intermountain System of fire-danger rating has been made available to Alaska fire-control personnel. This system has been of immeasurable assistance. If Alaskans of the future

APPALACHIAN slats being placed on rack over duff bed.

are to benefit from the productive potential of Alaska's forest lands, we must step up the tempo of fire research. The State and Nation, confronted with ever-increasing populations, need every tangible and intangible product a forest yields. The insatiable appetite of man for forest products will not lessen.

Refined fire-danger rating techniques can play a major part in assuring the ecological integrity of that small portion of Alaska forests as yet unburned, and in healing the wounds of past fires.

Literature Cited

(1). Glossary of Fire Control Terminology, Forest Service, U.S. Department of Agriculture, 1955.

(2) Hardy, C. E. and Brackebasch, Arthur P., Intermountain Fire Danger Rating, Proceeding Society of American Foresters (S.F.), 1959, p. 133.

(3) Hardy, C. E., Division of Fire Research, Intermountain Forestry and Range Experiment Station, Missoula, Montana (Personal communications), 1960.

(4) Glossary of Fire Control Terminology, Forest Service, U.S. Department of Agriculture, 1956.

(5) A cooperative national fire-research program, Federal and State.

(6) R. R. Robinson, Forest and Range Fire Control in Alaska, Journal of Forestry, June 1960, p. 448.

(7) H. J. Lutz, Ecological Effects of Forest Fires in Alaska, Forest Service, U.S. Department of Agriculture, Technical Bulletin 1133, 1956.

(8) R. R. Robinson, Rate of Spread Classification for Alaskan Fuel Types, 1960.

(9) J. S. Barrows, Fire Behavior in Northern Rocky Mountain Forests, Forest Service, U.S. Department of Agriculture, Station Papers #29, 1951.

(10) Brooks, Allen Hulse, Geological Survey, U.S. Department of the Interior, 1911.

End

NEW ALASKA WILDLIFE RANGES

THREE new wildlife ranges have been established by the Secretary of the Interior in Alaska. The Izembek National Wildlife Range embraces about 649 square miles on the north side and near the western end of the Alaska Peninsula. It is one of the most important concentration points for waterfowl in Alaska.

The Kuskokwim National Wildlife Range is located in the Yukon-Kuskokwim River delta in western Alaska. It contains about 1.8 million acres, extending across the great flat marsh and tundra from the mouth of the Kinak River north to Hooper Bay and east to Dall Lake and the head of Baird Inlet. The area will be one of the Nation's largest wildlife conservation areas. It is probably the greatest waterfowl breeding ground on the North American Continent.

The Arctic National Wildlife Range covers about 9 million acres in northeastern Alaska. It is an important habitat for grizzly and polar bears, Dall sheep, wolverine, and great migratory heads of caribou. There are nearly 100 birds species in the area.

PACKING in a portable fire danger rating station.

EROSION ABATEMENT

(Continued from page 7)

or other plotting methods. This reduction coincides with the reduction in livestock population and an active conservation program, yet it is impossible to state that the reduction in suspended sediment discharge was caused by either or both of these factors—it may be the result of pure hydrologic factors.

One study of the effect of land treatment is now being made in a small area in New Mexico. The study involves a comparison of the runoff, sediment yield, and reestablishment of vegetation in two adjacent similar basins, one of which was pitted and the other was left intact. The pitting was accomplished through use of a heavy roller to which were attached spikes 12 inches long, placed at 3-foot centers. As the roller was pulled over the area, the spikes pierced the ground to an average depth of about 8 inches, and in the rolling operation it broke up the soil for a few inches around the point of penetration. No attempt was made at reseeding the area.

In 3 years of observation there has been no discernible change in vegetation in the treated area compared to the untreated one. Examination following storms shows that penetration of moisture around the pits was considerably greater than in the intervening area between pits and in the untreated area, but for some reason not understood, this additional moisture failed to stimulate plant growth. The increase in soil moisture was reflected in a slightly lower runoff and a lower sediment yield. Here again the results may be somewhat questionable since the reduction in runoff might have resulted from a slightly lower

MPLING stream bed material.

quantity and intensity of rainfall on the treated area.

The effectiveness of small structures such as rock and brush spreaders, gully plugs, and small diversion dams is less difficult to evaluate since it is possible to observe how the structures act and the changes that occur in their immediate vicinity. Several studies of their performance have been completed, and the results generally have been disappointing. Two possible reasons can be ascribed for the ineffectiveness of these structures: (1) heavy damage to the structure and a high percentage of breaching or complete destruction, which makes proper maintenance impractical; (2) lack of reestablishment of vegetation, even in those areas where the structures have performed as anticipated.

An inherent weakness in many conservation structures is the fact that often it is necessary to design such structures without adequate hydrologic data for the area in which they will be built. This is done, not because conservationists are unaware of the importance of hydrologic data, but because the data are not available and conservation programs have to be started to meet public demands. The inadequacy of many conservation structures so designed is reflected in a shortening of their effective life by sediment that arrived at a rate much higher than was anticipated. Structural failure or damage may be caused by unforeseen high runoff which would have been noted and planned for had adequate hydrologic data been available.

It is important to realize that all types of conservation measures such as those described must be evaluated on the basis of benefits obtained. The simple, cheap structure, such as the low spreader utilized so extensively in the early phases of the conservation program, has proven to be the most expensive since it produced negligible results. The larger, more expensive structures appear to offer great promise in localities where conditions are favorable.

In western United States the urgent need in conservation at present is to develop methods for refilling the gullied channels that dissect practically all of the once productive valleys. Probably no one method will be applicable; it will likely require a combination and adaptation of several methods. The effect on water supply of any type of conservation treatment will have to be considered. With increasing population and expanding use of water there is strong competition for available supplies. Even the minor demands for conservation programs will be scrutinized to make sure they are fully justified and that they do not impinge unduly on established rights of higher priority.

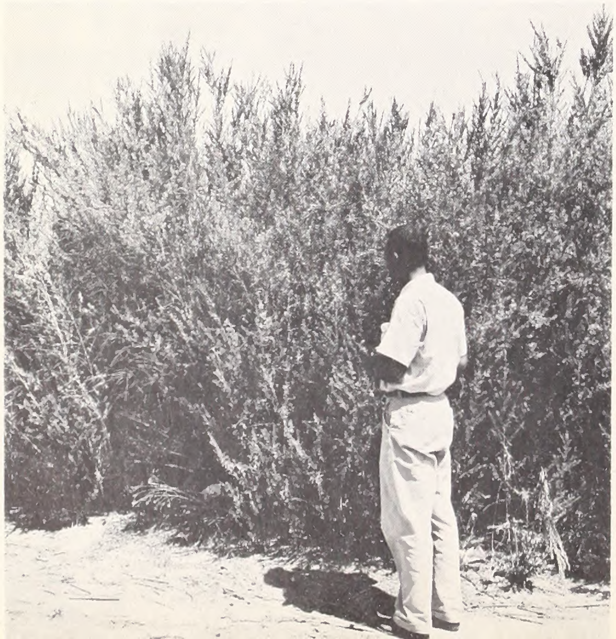
Conservation on rangelands is more of an art than a science, and the successful conservationist must therefore be alert to changes as they occur. Practices that show no measure of success should

LOWERING sediment sampler into the Rio Hondo in New Mexico.

PHREATOPHYTES along the Gila River in Arizona. A species of extremely deep rooted plants which consume enormous quantities of water.

be discarded without hesitation. Those that appear to have promise should be carefully studied and analyzed to bring out their strong and weak points. It is only by such an attack that any progress can be achieved in the conservation and rehabilitation of rangelands similar to those in western United States. **End**

ARROWWEED, most common phreatophyte along the Gila River in Arizona.



BLM GOES TO THE JAMBOREE

(Continued from page 9)

5 miles of sewer lines were constructed. Twe miles of primary electric lines brought in 900 ki watts to the camp.

Every precaution was taken to make the Jamboree healthful and safe. Approximately 200 medical doctors were on the Jamboree staff at sectional health lodges, and at the two 100-bed field hospitals on the grounds. In addition there were dentists, nurses, technicians, sanitation officers, ambulance drivers, and all other service personnel needed to man and run the hospitals and maintain good health standards.

It took a whale of a lot of planning to organize a program that would be both educational and entertaining to Scouts from every State in the Nation and practically every corner of the world. Thousands of volunteer man-hours went into the development of the fifth National Jamboree. Nearly 2 years before the Jamboree, Scout officials asked all major conservation and resource management agencies to help develop and present to the Boy Scouts at the Jamboree a comprehensive and educational story of conservation.

After a series of field planning sessions between the agencies, assignments were made within the conservation area. The Soil Conservation Service, Forest Service, Public Health Service, Weather Bureau, Geological Survey, Fish and Wildlife Service, National Park Service, Bureau of Land Management, and several private an Colorado State agencies were assigned speci responsibilities.

The conservation area of the Jamboree was divided into five sections: Geology and Weather, Soil and Water, Forestry and Range, Fish and Wildlife, and one section consisted of do-it-yourself conservation games run by a troop of Explorer Scouts.

BLM was asked to participate in two sections of the conservation area, Forestry and Range and Soil and Water. The Bureau had three exhibits in Forestry and Range and two in Soil and Water.

The Scouts passed through the conservation area in small groups on a rotational basis. Each exhibit was explained in an 8-minute talk. At the end of 8 minutes all groups rotated to a new exhibit. As they moved from one exhibit to another the Boy Scouts learned about geology, weather cycles, range management, watersheds, wildlife protection, soils, and the interrelationships between all of these things and conservation.

One of BLM's exhibits in the Soil and Water section, "Green Pastures," consisted of a table relief model of a public conservation area. It was demonstrated that conservation practices such as brush control, seeding, construction of ponds, and control of livestock use can often double the livestock carrying capacity of a range. The other exhibit in that section, called "Walking Waters," was a working model of a BLM waterspreading project. The peculiarities of Western weather cycles were explained to the boys. And the necessity of detention dams and waterspreading systems to control erosion and provide sufficient moisture for the growth and development of grass was pointed out.

Around BLM's exhibits the Scouts learned that grass, like timber, is a renewable resource. If it is managed wisely it will be replaced year after year with new growth to provide feed for livestock and wildlife.

In the Forestry and Range section BLM had three exhibits. The first, "Who Camped Here," gave everyone a chance to view a well-planned, properly cared for campsite next to a poorly designed, improperly cared for campsite. Scouts were encouraged to point out and discuss the good and bad features of the two campsites. Also, they were asked to offer solutions to such problems as litterbugs and destruction of public property. Participation was excellent, and often all ideas could not be voiced in the 8-minute rotational period.

The second exhibit in Forestry and Range, "What Grows Here," approached range management from the standpoint of how much meat an acre of grassland could produce. As the Scouts lined up under the sunshade in front of the exhibit they were confronted with a billboard showing a giant hamburger and a weight scale balancing grass and hamburgers. The BLM lecturer told how many bales of hay and acres of grass it would take to produce hamburgers for all of the boys. The Scouts were told how proper range management produced more grass for livestock and wildlife and thereby made more meat available for everyone's table.

"Visiting a Range" was the third BLM exhibit in Forestry and Range. In glass-paneled boxes, the Boy Scouts could see entire plants, from roots to leaves, growing under conditions which represented overgrazing, no grazing, and proper grazing. The boxes of grass were prepared for BLM by Colorado State University.

In the do-it-yourself conservation section Scouts could use a geiger counter to find uranium, scale logs, see an oil drilling rig in operation, and participate in many interesting games.

There were many things outside of the conservation area for the Boy Scouts to see and do. They indulged in Indian sand painting, arrowhead making, wood carving, tin can cookery, and many other interesting activities.

HISTORIC PIKE'S PEAK can be seen behind the Forestry and Range area.

During the Jamboree everyone had an opportunity to witness an exhibition by one of the world's top precision flying teams. The Blue Angels of the U.S. Navy put on a breathtaking demonstration of wing-to-wing aerial maneuvers at speeds up to 600 m.p.h.

Some 200 cowboys competed for awards in calf roping, bareback riding, saddle bronc-riding, and bulldogging in a series of rodeos at the Jamboree.

As the Jamboree drew to a close Scout packs bulged with the trade goods from all over the world; uniform patches, medals, horned toads, rings, polished rocks, and fabrics were exchanged. And Scout memories bulged with recently acquired facts, friendships, and experiences that would be cherished for many years.

The 1960 National Boy Scout Jamboree was an exciting and rewarding experience. To the agencies who cooperated in presenting the story of conservation it was a challenge met and a job accomplished.

For many people it was the first time they saw the complete field of natural resource management presented in a sense of harmony and cooperation. And that is the essence of conservation. **End**

ALL OVER. Scouts break camp and head for home.

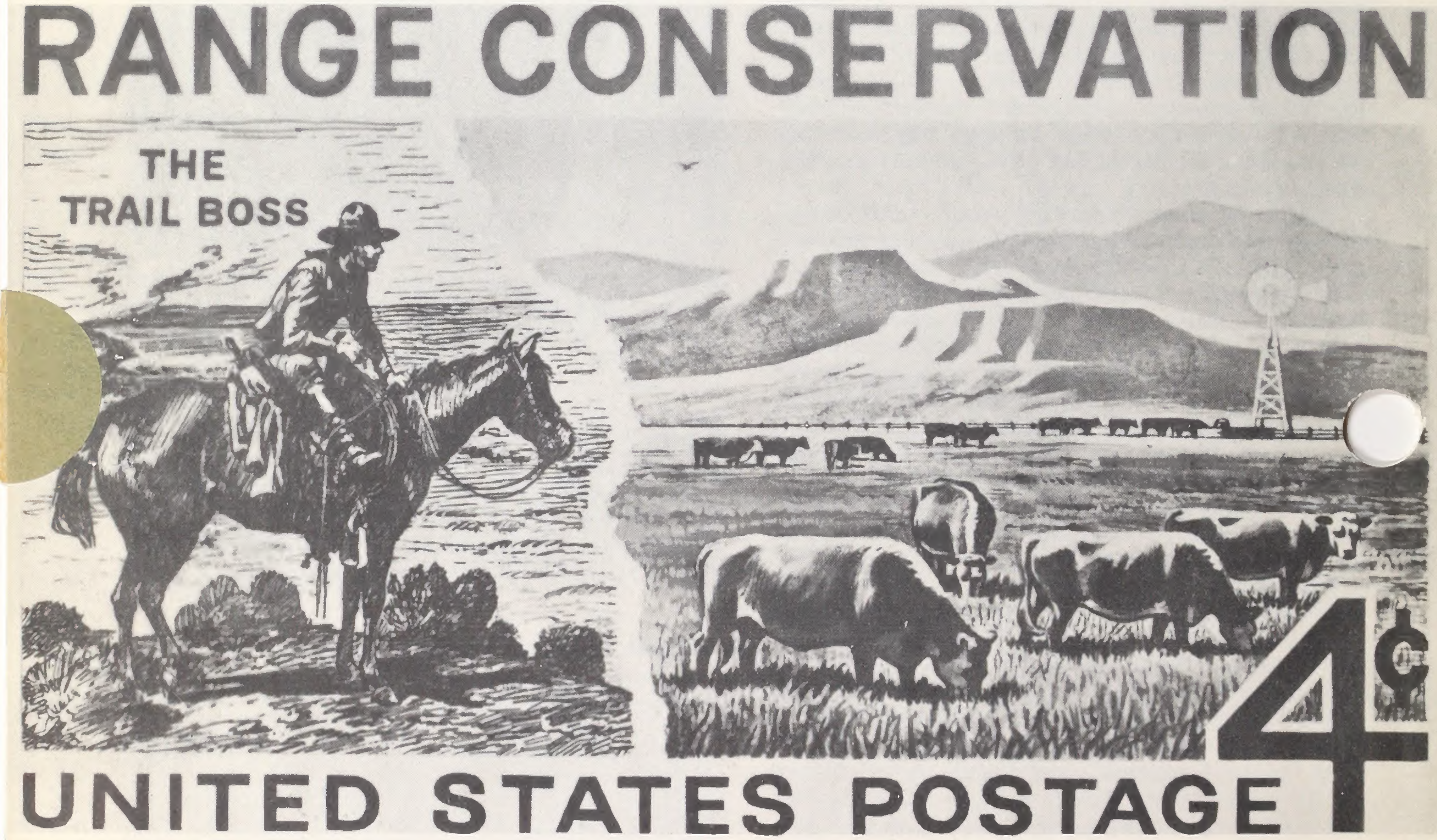
☆ U.S. GOVERNMENT PRINTING OFFICE: 1960 O—574752

For sale by the Superintendent of Documents, U.S. Government Printing Office, Washington 25, D.C. - Price 15 cents (single copy)
Subscription price 60 cents a year, 25 cents additional for foreign mailing.

SUPERINTENDENT OF DOCUMENTS
GOVERNMENT PRINTING OFFICE
WASHINGTON 25, D.C.

OFFICIAL BUSINESS

PENALTY FOR PRIVATE USE TO AVO
PAYMENT OF POSTAGE, $300
(GPO)



RANGE CONSERVATION is the subject of a new commemorative postage stamp to be issued on February 2 at Salt Lake City, Utah.